Does Race Affect Access to Government Services?: An Experiment Exploring Street-Level Bureaucrats and Access to Public Housing

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Abstract

While experimental studies of local election officials have found evidence of racial discrimination, we know little about whether these biases manifest in bureaucracies that provide access to valuable government programs and are less tied to politics. We address these issues in the context of affordable housing programs using a randomized field experiment. We explore responsiveness to putative white, black, and Hispanic requests for aid in the housing application process. In contrast to prior findings, public housing officials respond at equal rates to black and white email requests. We do, however, find limited evidence of responsiveness discrimination towards Hispanics. Moreover, we observe substantial differences in email tone. Hispanic housing applicants were twenty percentage points less likely to be greeted by name than were their black and white counterparts. This disparity in tone is somewhat more muted in more diverse locations, but it does not depend on whether a housing official is Hispanic.

WORD COUNT: 8,962

Scholars across the social sciences have used experiments to test for racial bias in a wide range of arenas including patient evaluations, job applications, and professors' responses to student requests (Schulman et al., 1999; Betrand and Mullainathan, 2004; Pager, Western and Bonikowski, 2009; Doleac and Stein, 2013; Milkman, Akinola and Chugh, 2014). In political science, audit-style experiments have focused on state legislators' and local election officials' responses to constituent requests about voting (Butler and Broockman, 2011; Mc-Clendon, 2012; White, Nathan and Faller, 2014). It goes without saying that understanding elected and election officials is critical and valuable, and that any bias that affects access to voting is an important political science matter. Without dismissing the substantive and normative implications of biased responses to queries about voting procedures, we argue that this line of scholarship misses a crucial quantity of interest far more relevant to the day-to-day lives of people who reach out to government: *access to tangible benefits and programs.*[1]

The supply of social services—particularly those targeted to low-income individuals—is limited. Moreover, accessing many of these programs is complex. For these reasons, potential beneficiaries will need to rely on street-level bureaucrats who are positioned to adversely affect access if they discriminate in ways consistent with findings from similar contexts (Butler and Broockman, 2011; McClendon, 2012; White, Nathan and Faller, 2014). Indeed, an ample literature suggests that, in the absence of clear rules designed to preclude discrimination, bureaucrats with discretion can act according to their own biases (Jones et al., 1977; Lipsky, 1980; Brodkin, 1997; Lieberman, 1998; Katznelson, 2005).

We use the case of affordable housing and our own audit-study style experiment of over 1,000 housing authorities to test whether street-level bureaucrats discriminate when citizens attempt to access substantive programs and services (see e.g. Grose, 2014, on using field experiments to study institutions, including a call for studies of bureaucrats). Public housing is in high demand and scarce. Roughly 1.2 million individuals currently reside in public

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[1]One political science study, to our knowledge, does experimentally evaluate these issues (Ernst, Nguyen and Taylor, 2013). Because it was an in-person study of interactions at local welfare offices, though, it was necessarily much smaller in scale, and thus likely less generalizable ($n = 54$).

housing managed by over 3,300 public housing authorities (Department of Housing and Urban Development, 2015a). Recipients represent a small fraction of the total population in need of such programs. In October 2014, the city of Chicago opened its wait lists for the first time in four years. It received 80,000 applications *in one day* (Bowean, 2014). During the same time period, almost 250,000 families were on the wait list for traditional public housing in New York City. An additional 100,000 were on the list for Section 8 vouchers (which subsidize private market rentals) despite the fact that the list has been closed to new applications since 2007 (New York City Housing Authority, 2015). Street-level bureaucrats play an important role in helping public-housing-seekers navigate the at-times byzantine application process. Baltimore is illustrative: applicants were only allowed to apply for a Section 8 voucher between October 22-30, 2014 and they were required to apply online.

Paralleling previous field experiments in political science and other fields, we email public housing officials with putative constituent service requests using identifiably white, black, and Hispanic names. While it is certainly reasonable to ask whether an additional field experiment using this design can contribute substantively important findings, we believe our study offers important advantages and insights. First and foremost, public housing officials constitute a more generalizable test of bureaucratic discrimination than do they election officials who were the subject of a recent, and impressive, audit study that concluded that bureaucrats discriminate (White, Nathan and Faller, 2014). While voter registration is important, it is also inherently political. It is also, barring nefarious activity, an abundant resource. Public housing is neither. Instead, housing agencies are precisely the sort of autonomous bureaucracies—featuring standardized federal procedures with many functions devolved to the local level—highlighted in theories of street-level bureaucrats' behavior. In addition, we believe that our outcome variables offer a useful mix of familiarity and novelty. While we measure responsiveness in familiar ways, we also include an additional dependent variable, tone, that has received much less attention. We ague that tone can affect the ultimate distribution of benefits in subtle but important and under-appreciated ways.

Moreover, while finding more evidence of bias holds obvious interest, results that *fail* to show bias—as is the case with some of ours—are also important. Given the well-deserved prominence of recent experimental studies of racial discrimination, and the gravity of the subject and the results, findings that question the generalizability of existing cases are especially important (see Arceneaux and Butler (2015) for more on the importance of reporting null results from well-designed experiments). Against an abundance of results documenting discrimination, findings of its absence are vital for suggesting pathways by which it might be curbed. Thus, any null results may both serve as an important brake on over-generalization in the literature *and* provide valuable practical lessons for countering discriminatory tendencies.

Our results reveal a mix of striking patterns and striking non-patterns. First, we do not find evidence of responsiveness discrimination in general. In fact, we find evidence contra other well designed experiments' findings of discrimination against blacks. Second, when focusing on tone, we do observe meaningful differences. Ostensibly Hispanic emailers were about *twenty percentage points* less likely to be addressed by name at the beginning of responses than were their black and white counterparts. Further analysis focused on the demographics of officials and communities provides some tentative, but mixed, support for theories of representative bureaucracy, familiarity bias, and contact theory. We conclude by discussing possible explanations for the relative lack of racial bias in our study, including the racial demographics of public housing, fair housing legislation, and bureaucratic professionalism.

1 Racial Bias and Bureaucracy

We consider two potential types of harm that could emerge if bureaucrats discriminate in their responses. The first is straightforward and well-trod in previous field experiments: the failure to provide relevant factual information. By not responding, and thus not of-

fering information about the complicated application process, a bureaucrat likely increases the challenges associated with applying for public housing and reduces one's likelihood of completing the process. The second is somewhat more subtle and less widely used.[2] A bureaucrat could respond, but her tone could be less friendly and encouraging to members of particular groups. Recipients of unfriendly communications might lose confidence in their chances of obtaining the resources they are pursuing or lower their trust in the organization. They might also make inferences about the effort an official will exert on their behalf over an inherently long process. All of these mechanisms could make applicants less likely to follow up with additional inquiries or diminish the likelihood they obtain the desired service for other reasons.

Both individual and institutional factors point to potential discrimination in social service provision. Sadly, a strong reason to foresee discrimination is the fact that human beings administer these programs. Previous research in political science and a variety of related fields suggests that we should observe fewer and less friendly responses to black and Hispanic constituents. Racial stereotypes remain widespread (Bobo, 2001) and a powerful influence on American public opinion (Kinder and Kam, 2009). These biases have manifested in a wide variety of settings. All else equal, blacks and Hispanics making queries about voting procedures are less likely to receive responses from state legislators and local election officials than whites (Butler and Broockman, 2011; White, Nathan and Faller, 2014). Outside of political outcomes, blacks and Hispanics receive fewer call-backs for low-wage jobs (Pager, Western and Bonikowski, 2009) and fewer emails from faculty members concerning research opportunities (Milkman, Akinola and Chugh, 2014) than whites do. They are also told about and shown fewer available homes and apartments (Turner et al., 2013), receive fewer emails and lower bids when selling goods online (Doleac and Stein, 2013), and higher prices when buying used cars (Ayres and Siegelman, 1995).[3]

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[2]White, Nathan and Faller (2014) feature friendliness as one of their dependent variables, though it does not comprise a central component of their analysis.

[3]The Doleac and Stein (2013) and Ayres and Siegelman (1995) studies focus exclusively on black-white discrimination.

Quite simply, one could predict bias by assuming that the tendencies and psychology that affect other government officials, professors, realtors, and online sellers also affect social service employees. Moreover, social resources, notably public housing, are generally scarce. Such scarcity may create especially strong incentives for taste-based or statistical discrimination when allocating such resources. Officials might be inclined to preserve limited resources for a favored group (taste) or use racial signals and associations to allocate resources more "efficiently" (statistical). There is also some empirical evidence to support the intuition that discrimination manifests among social service bureaucrats (Keiser, Mueser and Choi, 2004; Fording, Soss and Schram, 2007; Schram et al., 2009; Davis, Livermore and Lim, 2011; Ernst, Nguyen and Taylor, 2013). Devolution of welfare policy has yielded significant variation in autonomous welfare offices' sanctions of participants. This variation includes more explicit sanctions and negative treatment for racial minorities (Fording, Soss and Schram, 2007; Keiser, Mueser and Choi, 2004; Ernst, Nguyen and Taylor, 2013). On balance, this evidence provides strong reasons to expect at least as much discrimination in social welfare service provision as other scholars have found in other areans. Similar institutional factors related to devolution and frontline officials' roles apply to some of the cases in the literature and to public housing. Taking these lines of thinking in concert brings us to **H1:** *All else equal, bureaucrats will be less responsive and less friendly to blacks and Hispanics than they are to whites.*

On the other hand, there are also reasons to expect mechanisms unique to bureaucratic social service provision to mitigate broad discriminatory tendencies. The theory of representative bureaucracy implies that we may observe differences in responsiveness to blacks and Hispanics, and that both groups may receive better service than postulated in H1. Scholars have long been concerned about whether bureaucracies, as unelected bodies tasked with critical aspects of policy implementation, pose a threat to democratic representation. One line of research in public administration argues that these fears may be overstated. Rather than acting as unrepresentative bodies of unelected officials guided by the individual or in-

stitutional interests, bureaucracies can represent the interests of their constituents. These scholars argue that bureaucrats whose traits coincide with a population's demographic diversity are more apt to *actively* represent constituents interests (Mosher, 1968; Krislov, 1974), particularly in the case of otherwise disadvantaged minority groups (Krislov, 1974; Meier, 1993; Coleman, Brudney and Kellough, 1998; Meier, Wrinkle and Polinard, 1999; Sowa and Selden, 2003; Bradbury and Kellough, 2011, though see Ernst, Nguyen and Taylor 2013).[4] A similar, but related, literature finds favorable interactions when citizens and bureaucrats share race, ethnicity, or gender (Epp, Maynard-Moody and Haider-Markel, 2013; Riccucci, Ryzin and Lavena, 2014). This line of scholarship brings us to **H2**: *All else equal, bureaucrats will be more responsive and friendly to members of their own racial/ethnic groups.* While some of the representative bureaucracy scholarship (Meier, Wrinkle and Polinard, 1999) contends that demographic diversity among bureaucrats will lift the fortunes of *all* of a bureaucracy's constituents—not just coethnic constituents—for simplicity's sake, we focus on the most basic version of representative bureaucracy.

A third closely linked hypothesis stems from theories of intergroup contact (Allport, 1954; Pettrigrew, 1998) and familiarity bias (Tversky and Kahneman, 1972). Putting aside bureaucrats' demographic characteristics, we might anticipate an inclination to aid members of groups with which they most familiar. Contact may diminish discriminatory biases, or psychological mechanisms may prompt individuals to favor the familiar over the novel. Given the power differential between caseworkers and clients, and the inherent community-based nature of housing, we suspect that the important contact will take place in the local community outside of a social service agency. This leads us to **H3**: *All else equal, bureaucrats exposed to more black and Hispanic constituents will be more responsive and friendly to black and Hispanics, respectively.*

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[4]Representative bureaucracy scholarship has been particularly focused on education, with studies uncovering an important role for minority educators in bolstering nonwhite student performance (Meier, Wrinkle and Polinard, 1999; Grissom, Nicholson-Crotty and Nicholson-Crotty, 2009; Grissom, Kern and Rodriguez, 2015).

2 The Case of Public Housing

To evaluate these predictions, we selected the case of public housing. We opted for it over other plausible candidates because it is a federal program that is heavily devolved to the local level. Common federal guidelines make local housing authorities simultaneously institutionally comparable and highly autonomous. We should not expect, for example, housing authorities in the South to be radically different (institutionally at least) from those in the East, or for variations in state laws to affect outcomes. Indeed, *all* public housing authorities are administering the same federal programs: subsidized housing choice vouchers under the Section 8 program or conventional public housing.[5] The former allow recipients to use subsidies to obtain market-rate private-sector apartments. The latter offers subsidized accommodations in government-owned units.

There is sufficient devolution to the local level, however, that local offices and officials have discretion in the promulgation of policies they did not themselves design. This is the lynchpin of the definition of a "street-level bureaucrat" (Lipsky, 1980). In order to encourage the creation of mixed-income housing developments, the federal government dramatically increased public housing authorities' discretion with the passage of the 1998 Quality Housing and Work Responsibility Act. In particular, this legislation permitted public housing officials far greater authority in setting the rules for selecting tenants and Section 8 voucher recipients so long as they abided by federal fair housing guidelines (Lazio, 1998; Vale, 2000; Schwartz, 2010). By allowing for local autonomy and the proliferation of varying selection criteria, devolution creates a more complicated informational environment. This environment increases the importance of public housing authority officials' in helping people navigating the application process. Moreover, it offers street-level bureaucrats greater opportunities to exercise individual authority and discretion (Fording, Soss and Schram, 2007).

While no one bureaucracy can possibly stand in as a representative for all, we believe that

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[5]While housing authorities primarily implement federal programs, some housing authorities appear to administer locally-funded voucher programs as well. The Boston Housing Authority, for example, promulgates vouchers funded at the federal and state levels.

public housing officials represent a body of bureaucrats distinct from election administrators who administer inherently political and less scare programs. Indeed, as non-political, social service providers, public housing officials likely share important characteristics with many counterparts administering social programs in the Department of Health and Human Services for example. While not necessarily indicative of local staffing, HUD and HHS have virtually identical agency preference scores at the federal level (Clinton and Lewis, 2008). Thus, public housing bureaucrats permit us to test discrimination in a substantively different, and more broadly representative, context than those used in prior research.

3   Data and Methods

We emailed public housing authorities at their publicly available email addresses (or online contact forms) using an audit study design. Each housing authority received an email on one of two days in the same week during 2014.[6] We emailed *all* public housing authorities that could plausibly be matched with a core city in a metropolitan or micropolitan area ($n = 1017$). This was to ensure that the public housing authorities we selected could easily be matched with census demographic data (many public housing authorities covered regions that would be difficult to match with census geocodes).[7] Our sample comprises an enormous range of places. In includes communities with 10,000 residents alongside the largest cities in the country.

Each housing authority was randomly assigned (via random number generator) to receive an email from one of six different accounts with putatively white, Hispanic, and black names (Table SI1 in the supplemental information shows balance in the average demographics for the communities assigned to each treatment). For each racial/ethnic group, we chose

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[6]The emails were sent on two separate days as a consequence of Google Mail batching limits.

[7]In particular, many housing authorities in smaller towns and more rural areas did not have websites, making it impossible to precisely determine what communities they served. Take the example of the Walnut Housing Authority in Mississippi, which has no website of its own. Its address on the HUD public housing authority director is listed as being in Corinth, MS. The town of Walnut and the city of Corinth are separate jurisdictions according to the U.S. Census Bureau.

one male and one female name to address any possible gender interactions emerging from the disproportionately female-headed household composition of American public housing.[8] Using both male and female names naturally reduces the number of observations for each treatment. Nevertheless, we felt it was important to have both given the prevalence of females in public housing and studies that use only male names in the audit study literature. Below, we analyze the data with males and females separated and consolidated by race.

The six names were as follows: Brett Smith, Emily Smith (white); Tyrone Johnson, Shanice Johnson (black); and Santiago Martinez, Gabriela Martinez (Hispanic). For the white and black emailers, we chose names that were listed among the 20 most distinctively black and white names in Levitt and Dubner (2010). In a similar audit study published in a leading economics journal, Brett and Tyrone predicted their respective races at a rate of greater than 90 percent (Betrand and Mullainathan, 2004). Observational data from the state of California similarly bolsters our choices of female names. 97% of children named Shanice between 1989-2000 are black, and more than 98% of their counterparts named Emily are white (Fryer and Levitt, 2004).

Our selection of Hispanic names relied more heavily on the surname (Martinez) being distinctively Hispanic. While the black and white surnames we used are relatively common among both racial groups (Word et al., 2000)),[9] Martinez is strongly linked with Hispanic ethnicity. Nearly 92% percent of individuals with the surname Martinez are Hispanic (Word et al., 2000). More generally, surname is a strong identifier of Hispanic ethnicity, and it is reliably and widely used in both political science and other disciplines to predict it (Barreto, Segura and Woods, 2004; Wei et al., 2006; Henderson, Sekhon and Titiunik, 2013). The U.S. Census Bureau provides a list of Spanish surnames (including Martinez) that correctly identifies 93.6% of all Hispanics; just as importantly, fewer than 5% of those identified are false (Word and Perkins, 1996; Barreto, Segura and Woods, 2004). Combining Martinez

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[8] Roughly three-quarters of families in virtually all forms of public housing are female-headed households (National Low Income Housing Coalition, 2012).

[9] Although Johnson appears at a slightly higher than expected rate among blacks (33.5%), neither surname is meant to signal racial identity; instead we used widely validated first names for this purpose.

with two first names drawn from an online list of the 100 most popular Hispanic names (BabyCenter en Espanol, 2011), these two names powerfully signal Hispanic ethnicity.

While we generally followed previous studies' practices in selecting names, we made a couple of important adjustments. We were attentive to the age that the names we chose implied. One name prominently used in a recent audit study—Deshawn—came into use almost exclusively after 1970 according to data from the Social Security Administration. Thus, Butler and Broockman's (2011) comparison of responses to emails from Deshawn and Jake—a name that has been in use with varying prominence since the turn of the 20th century (Wattenberg, 2005)—may actually be estimating the causal effect of being a *young* black male relative to being a white male of unclear age. This could inflate the amount of measured bias. The age distributions for Tyrone and Brett largely overlap with peaks in the 1960s and 1970s. Similarly, Emily and Shanice's distributions largely overlap, with peaks in the 1980s.[10] Gabriela and Santiago's age distributions also match chronologically; these names' peaks in the 1990s and 2000s in Social Security Administration Data are likely due to recent trends in Hispanic migration.

Our email text was the following:

> Hello,
>
> My name is X and I'm trying to figure out how to apply for public housing. I believe I may be eligible.
>
> Can you direct me to information about applying for public housing here? I also heard there might be a wait list for this program. How long is it?
>
> Thanks, X

We used a fairly generic request for "public housing"—rather than specifying a particular program—for several reasons. First, we wanted to ensure that our email would be equally

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[10]While we ideally wanted to use "older" female names, analogous to Tyrone and Brett, *none* of the distinctively black female names rose to prominence until after the 1970s.

applicable and reasonable at all of the public housing authorities in our sample. Since there are significant variations in the scale and type of programs offered, we avoided incorporating particular programs in our query for help. Second, we eschewed referencing specific programs because we did not want to signal an overly sophisticated applicant. Doing so could affect bureaucratic responsiveness in a variety of unintended ways.

Finally, we note that email is not the only, or perhaps even primary, way that many reach out to housing authorities—though the same could be said for elected representatives, election officials, and others who have been audited via email. Nevertheless, our data suggest that many housing authorities are used to corresponding and connecting with potential residents online. 55% of the housing authorities we contacted either provided easily accessible email addresses or "contact us" web forms. In the other 45%, we could not easily find email contact directly from the housing authority. In these instances, we used the email contact information available via HUD's website. Importantly, these less web-friendly housing authorities were evenly distributed across the three racial groups (43%, 45%, and 47%). While these cases suggest that emailing a housing authority may not always be the best way to get information from it, even 49% of our emails to the harder-to-find addresses received responses. Emailing even the less web-friendly housing authorities to seek information thus does not appear to be especially unusual. To further document the web-friendliness of housing authorities, we took a random sample of 50 (5% of our total sample), and visited their websites to look for information targeted at potential applicants. 66% provided easily accessible information about things such as the application process, the status of waiting lists, eligibility criteria, or housing stock. In some other cases, housing authorities did not have a discernible web presence. In the statistical models below, we include a variable indicating whether we had to use the HUD website to find an email address (the "Hard Email" variable).

3.1 Ethical Considerations

Our email text more generally reflects important ethical considerations that are prominent and well-discussed in similar field experiments (e.g. Butler and Broockman, 2011). First, we contacted government employees in their professional capacity. Second, our experimental treatments were not designed to alter their behavior but rather to measure it. Third, we were attentive to minimizing the amount of time workers devoted to requests for information from fictitious constituents. We were especially attuned to this issue since one of us actually worked in public housing prior to entering academia. The "can you direct me" portion of the email was designed to encourage housing officials to either send a link to a webpage or to copy and paste standard directions. The bulk of emails we received do, in fact, feature these sorts of responses. The "how long is [the wait list]" query similarly elicited fast answers that required no more than a few words. Moreover, we did not engage with housing officials at all after the first email, even if our putative request for assistance was met with a followup question. While some burden is necessary in order to gain insight into how bureaucrats allocate their finite time (Hall, 1996), we believe that our minimal intervention did not substantially distract housing officials from serving their constituents. Finally, we did use deception, consistent with all other prominent audit studies cited in this paper. This deception is necessary to experimentally test whether bureaucrats exhibit racial biases in their responses to constituents. Without the random assignment of race and gender, we would be unable to measure this important quantity of interest. We, of course, took anonymity very seriously, and all of our analyses reflect comparisons across *groups* of housing officials.

3.2 Key Variables

We focus on two ways bias could manifest: 1) responsiveness and 2) friendliness. The former is directly analogous to the main dependent variable in existing racial bias research. We calculate responsiveness rates and assess the timeliness and completeness of the responses.

"Friendliness" is a less widely used variable, and quantifying it is somewhat more chal-

lenging. We use what we believe to be the most easily comparable (and least subjective) measure across emails: whether the emailer is addressed by proper name. We were lenient in coding "yes." A named salutation could be as causal as "Hi Brett" or as formal as "Dear Ms. Martinez."[11] An ample literature in psychology and public opinion suggests that named salutations are surprisingly important to recipients. In particular, they dramatically boost survey responses (Heerwegh, 2005; Joinson and Reips, 2007). Moreover, this effect (in some studies) is stronger when the sender is seen as powerful (Joinson and Reips, 2007) as may be the case for housing officials emailing public housing applicants. There are many potential mechanisms at play here. Perhaps most prominently, a wide array of psychological research reveals that individuals have a powerful affinity for their own name. This manifests in ways such as more carefully examining resumes and advertised brands with names similar to one's own (Howard and Kerin, 2011). We anticipate that named salutations, then, may lead an applicant to feel more warmly and better-served. In addition, a named salutation might also signal the effort a caseworker will put forward in helping a client through the housing application process. Because we do not follow up on our initial email correspondence, though, we cannot measure the ensuing interactions.

To evaluate H2, we need information about workers' demographics. Unfortunately, public housing authorities do not publish data on the racial and ethnic breakdowns of their staffs. Thus, we attempt to at least roughly assess H2 by incorporating, when possible, the ethnicity of the housing authority official who responds to the email. We do so by coding Hispanic ethnicity based on the *responding* official's email address name.

Note that we are only measuring whether the responding housing official is Hispanic or not. In an ideal world, we would use the responder's name to classify him/her as black or white in order to better correspond with our treatment groups. As above, while ethnically distinctive surnames are reliable and widely used predictors of Hispanic ethnicity, there are

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[11]This measure is somewhat analogous to that featured in White, Nathan and Faller (2014). They code friendliness using both salutation by proper name and the use of "explicitly friendly language" like "Let us know if you have any more questions." We viewed the "explicitly friendly language" as somewhat more more challenging to accurately code, and thus limited ourselves to the more clearcut proper name salutation.

no census lists of black and white surnames that provide anywhere near the same accuracy that the Hispanic surname list does (Henderson, Sekhon and Titiunik, 2013).

We are also only capturing the ethnicity of those individuals who actually respond to our emails. Information about those who received email requests, but did not reply is unfortunately unavailable due to the nature of housing authority email addresses which rarely feature an individual's name. Instead, they are typically a generic address like "citynamepublichousing@cityname.org." Responses then come typically come from an individual's named account. Thus, we can evaluate H2 *only for those observations for which we received e-mail responses.* Since the treatments were randomly assigned, in expectation, our emails should have reached Hispanic officials at equal rates in each condition allowing us to compare those that were returned. If a disproportionate number of Hispanic officials received the emails in the Hispanic conditions due to random chance it would undermine these inferences. While we cannot know who the emails reached, we do know that the average Hispanic populations in the communities were similar across the three racial treatment groups (14.0% in the white group, 14.5% in the black group, 13.8% in the Hispanic group). Lastly, we note that this issue only applies to part of our H2 analysis—the portion exploring bias in responsiveness—and not the rest of the results for H2 or our other hypotheses.

As with our analysis of H1, we use two different dependent variables to evaluate H2. First, we explore whether bureaucratic ethnicity shapes responsiveness to Hispanic email requests. Second, we investigate whether the ethnicity of the email responder shapes the likelihood that a putative constituent is addressed by name in the response.

To evaluate H3—which postulated that bureaucrats in communities with more black and Hispanic residents would be more responsive to black and Hispanic constituents, respectively— we include community racial demographics. We obtain the proportion white, black,[12] and Hispanic at the "place" level from the American Community Survey's 2012 5-year estimates. In addition, we incorporate other relevant demographic controls from the census into our

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[12]We calculate the proportion non-Hispanic white and black.

statistical models city poverty rate and population. The poverty rate is likely related to the demand for housing and the overall number of inquiries to which a bureaucrat must respond. Similarly, larger cities may have more professional housing authorities or more resources along with different public housing applicant pools, for example.

4   Results

We begin by evaluating H1 and testing whether the race of the inquirer affects whether housing officials are more likely to respond and the speed and comprehensiveness their responses. In Figure 1 we report the raw and and un-modeled data — the proportion of inquiries that received email responses (with 95% confidence intervals). On the left we separate out all six conditions (e.g. white male (Brett)). On the right we consolidate by race. Overall, we do not find strong evidence of different responsiveness by race or gender (χ^2, p = .31 for the six treatment category tabulation). The range across the six conditions is a mere 10 percentage points, from a low of 53% to a high of 63%.

Given the theoretical emphasis on discrimination against minorities, we primarily care about comparisons between whites and blacks and whites and Hispanics. The former comparison offers findings contrary to those in other studies. Our findings do not merely fail to find significant evidence of discrimination due to insufficient statistical power. To the extent we do get variation, it is in direction counter to other findings of discrimination against blacks. Blacks actually received the highest response rates: 60.7% vs. 57.5% for whites ($p = .41$). Even comparing the extreme ends of the white and black 95% confidence intervals only yields a maximum plausible discrimination of eight percentage points.

The evidence concerning Hispanics is more mixed. It does not offer especially strong support for or against the discrimination hypothesis. The two Hispanic treatment conditions did receive the two lowest response rates. The difference between whites and Hispanics is 4.8 percentage points ($p = .11$). On the one hand, attributing systematic discrimination

Figure 1: Proportion of inquiries that received a response by race*gender (by name) and by race (males and females combined)
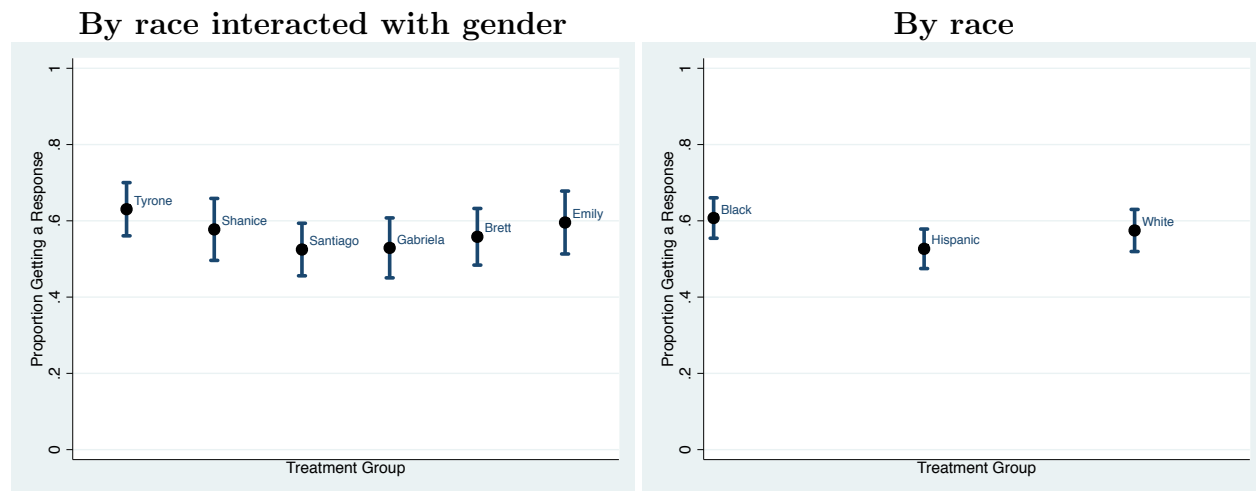
on the basis of this fairly small and borderline significant (with a one-tailed test) difference would constitute overly extrapolating from the given data. On the other hand, the Hispanic findings do not provide the evidence *against* the discrimination hypothesis that the black name results do. In fact, the substantively small magnitude we find is similar to the anti-Hispanic responsiveness difference uncovered in White, Nathan and Faller (2014) with more observations (and thus smaller standard errors). This could be taken as evidence bolstering the conclusion of discrimination against Hispanics. It could also be taken as evidence that responsiveness bias against Hispanics is very small in magnitude and is only significant when the Ns are sufficiently large. Importantly, having all three racial groups in our study allows us to compare anti-black to anti-Hispanic discrimination. This comparison, as we discuss later, shows that the two types of anti-minority discrimination are not the same and may derive from (or get reduced by) different mechanisms. The difference between blacks and Hispanics is about 8 percentage points ($p = .02$).

We utilize multiple logit model specifications to test for effects more rigorously. In Table 1, we depict the effects of race on our dependent variables of interest. Here, in accordance with our theoretical predictions, we consolidate the treatments by race (males and females

together). These models include pertinent control variables that may be associated with responsiveness: percent black and percent Hispanic in the community, poverty rate (related to the demand for housing and perhaps the number of inquiries), population (logged), and a variable that indicates that a housing authority's online contact address was difficult to obtain ("Hard Email"). Similar models that do not consolidate the treatments by race produce very similar results. They are available in the supplementary materials (Table SI2).

The model in the first column reports the results using the responsiveness variable. Contrary to H1, it provides little to no evidence of racial discrimination. It does show less responsiveness in poorer areas (perhaps they have less housing available or bureaucratic capacity to respond). It also shows less responsiveness from housing authorities that did not provide easily accessible electronic contact information. While these variations are worthy of further exploration, the main implications concern race. Our failure to reject the null is not the same as demonstrating no effect. Nonetheless, we believe these results in conjunction with the next set of findings on response speed are strongly suggestive of an absence of racial discrimination. The likelihood ratio test comparing model (1) to the same model without the race indicators is insignificant (χ^2=4.49, p= .106). As with the summary statistics, this model provides some suggestive evidence of small anti-Hispanic bias, but none that reaches conventional significance levels.[13]

Finally, we address the possibility that aggregate balance is masking off-setting preferential treatment (an issue that becomes even more important in our discussion of representative bureaucracy below). Butler and Broockman (2011) find that among Democrats, black state legislators are more likely to reply to black constituent requests than to their white counterparts. One way to roughly estimate the underlying distribution of housing officials is to assume they are drawn from the populations in which the housing authorities are located.

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[13]We note that results of all three models in Table 1 are unchanged when including the HUD assessment scores that we discuss below as a proxy for a housing authority's professionalism and capacity. (Because these scores are only available for about two-thirds of the housing authorities we do not include them in the models we report).

Table 1: Logit models for our three dependent variables, with all three racial groups and other demographic controls variables

	(1) Response	(2) Response in 24 Hours	(3) Proper Name Greeting
Black Name	0.13	0.29	-0.21
	(0.17)	(0.26)	(0.22)
Hispanic Name	-0.21	0.10	-0.82**
	(0.16)	(0.25)	(0.22)
Percent Black	-0.31	-0.17	0.71
	(0.52)	(0.87)	(0.74)
Percent Hispanic	-0.32	-0.92	1.33*
	(0.43)	(0.69)	(0.63)
Poverty Rate	-1.65*	1.28	-.93
	(1.21)	(2.00)	(1.71)
Log Population	0.13	-0.01	-0.04
	(0.07)	(0.10)	(0.09)
Hard Email	-.46**	-0.14	-0.42*
	(0.14)	(0.22)	(0.19)
Constant	-0.50	1.33	0.88
	(0.75)	(1.16)	(0.99)
Observations	978	551	549
Log Likelihood	-650.7	-286.8	-367.5

Standard errors in parentheses

** $p < 0.01$, * $p < 0.05$

Base category is white. Demographic variables from 2012 American Community Survey

The average community in our sample is 66.5% white, 13.5% black, and 14.5% Hispanic. Thus, even if blacks (or Hispanics) are disproportionately represented in government jobs (about 19% of blacks, 14% of whites, and 10% of Hispanics work in the public sector (Department of Labor, 2012a,b)), it is very unlikely they are overrepresented enough to account for the overall balance we observe.

To supplement these findings, we considered two other indicators of responsiveness. First, we assessed speed by checking whether those that did respond did so within 24 hours (essentially by the end of the next working day given the timing of our emails.) We conducted all of the same analysis as we did with the basic responsiveness dependent variable (Figure SI1 and Table SI3 in the supporting information and Model (2) in Table 1). These results

largely mirror those above. In fact, they offer even less evidence of discrimination mainly because the suggestive anti-Hispanic bias disappears. Brett, the white male, actually obtained the lowest 24-hour response percentage and had the highest median response time. Finally, responsiveness bias might manifest in the quality of information received. Only 48% of responses included wait list times – a query we included in the emails. 43% of Hispanics who obtained a response received information about wait list times compared to 50% for blacks and 49% for whites. These results fall well short of conventional levels of statistical significance (p=.427 χ^2 test).

4.1 Evidence of Discrimination: Tone

We also postulated that racial bias might manifest in officials' friendliness when they do respond. Using salutation by proper name as our measure of tone (see above), we report the proportion of responses that began with a personalized greeting in Figure 2 by the six treatments and three racial groups.

Figure 2: Proportion of responses that begin with a personalized greeting
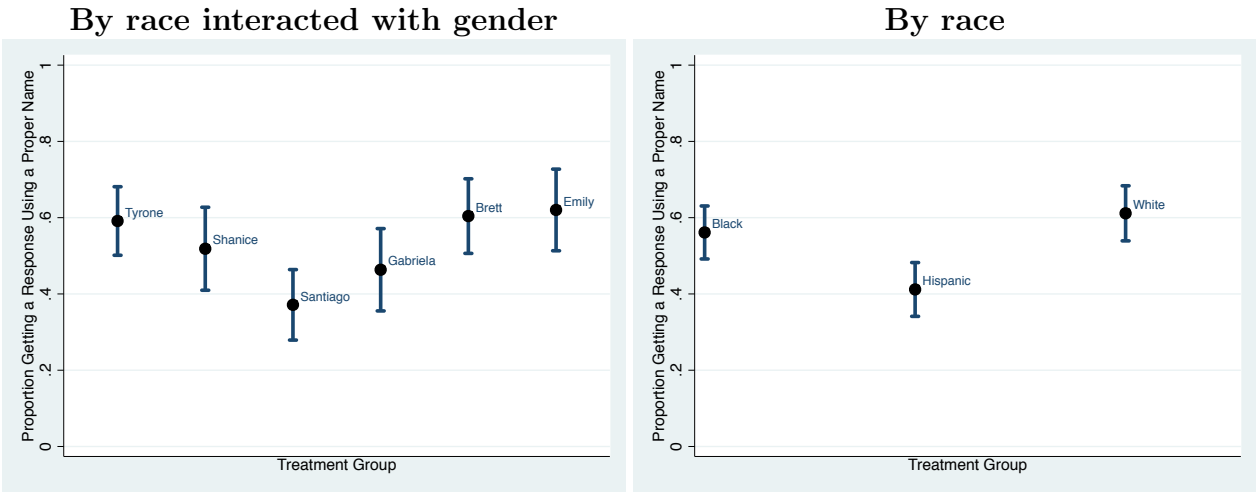
Here, we do see evidence of racial bias, but only against Hispanics. Sixty one percent of the messages to the white emailers began with a named salutation. Only 41% to Hispanics

did. This difference is highly significant (p=.000). Only 37% of responses to Santiago began with a named salutation compared with over 60% for Tyrone, Brett, and Emily.

The model we report in the text, the third column of Table 1, further demonstrates the negative impact a Hispanic name has on receiving a named greeting. The Hispanic name indicator variable is substantial, negative, and highly significant. Substantively, the change in the predicted probability of getting a named salutation as a function of changing from a white name to a Hispanic one (other variables at their means) is -20.0 percentage points (95% confidence interval [-30.5, -10.0]). Moreover, the percent Hispanic variable is positive and significant suggesting that named greetings, perhaps especially for Hispanics, are more likely in areas with higher Hispanic populations. (Similar models that include all six treatments separately (Table SI4) bolster these results.) These results differ from those in White, Nathan and Faller (2014) as they find a discrimination in responsiveness but not tone. Part of this variation in results, though, may be attributable to slight differences in how friendliness in tone was coded.[14]

4.2 Community and Officials' Demographics

Representative bureaucracy, contact theory, and familiarity bias may explain some of the variation between our results and findings of bias in other settings. We thus assess the interaction of the race of the putative constituent and (1) the demographics of public housing officials and (2) the traits of the community in which she is applying.

Because we were only able to determine a housing official's ethnicity when they responded to our e-mails, we cannot observe the denominator. We can only estimate responsiveness by assuming that randomization balanced the odds of an email arriving on the screen of a Hispanic official in the first place. Doing so suggests that responsiveness is not driven by officials favoring respondents of their own race. Of all of the responses for whites, blacks, and Hispanics, 6.2%, 6.1%, and 9.0% respectively came from ostensibly Hispanic officials

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[14]As above, we also did this analysis coding all non-responses as unfriendly responses to address the truncation problem. This does not affect the results.

($p = .453$). Similarly, conditional on replying, Hispanic officials are not more likely to respond in 24 hours to Hispanic applicants (81.8% (white), 83.2% (black), and 88.2% (Hispanic), $p = .88$) Again, there is little evidence to support the conclusion that Hispanic emailers did appreciably better when interacting with Hispanic housing officials.

In Figure 3, we show the proportion of friendly responses coming from Hispanic officials. We find that Hispanic officials were no more likely than their non-Hispanic counterparts to address Hispanic constituents by name. 47% of responses from Hispanic housing officials addressed Hispanic constituent requests by name, compared with 40% from non-Hispanic housing officials—a difference that was not statistically significant in our sample. What's more, the lower rate at which Hispanics receive named greetings (displayed in Figure 2) appears to hold even when we only look at responses from Hispanic housing officials. Though the results are no longer statistically significant due to large standard errors, Hispanics continue to receive the lowest share of named greetings, even when the housing official responding to their request is also Hispanic. Thus, our admittedly crude efforts to test H2 (representative bureaucracy) suggest that it is an unlikely candidate to explain why we did not find the same responsiveness bias against minorities that other scholars have. These results come with important caveats though. The cell sizes are small. More importantly, we are unable to test for analogous effects for black and white housing officials.

The effects of community traits do provide some support for H3. The first (and we hope intuitive) way we move beyond average effects is to create variables capturing whether each housing authority is in a community that is in the top, middle, or bottom third of the distribution for black population and for Hispanic population. Because these distributions are so skewed, the top thirds for black and Hispanic percentages start at around 12% black and Hispanic, respectively. Communities in the bottom thirds have essentially no black or Hispanic residents. We chose to convert continuous demographic variables into categorial ones both to reduce the impact of places with 80% or 90% black (or Hispanic) populations, and because the theoretical questions are better thought of in terms of high or low populations

Figure 3: Proportion of responses from Hispanic housing officials that begin with a personalized greeting
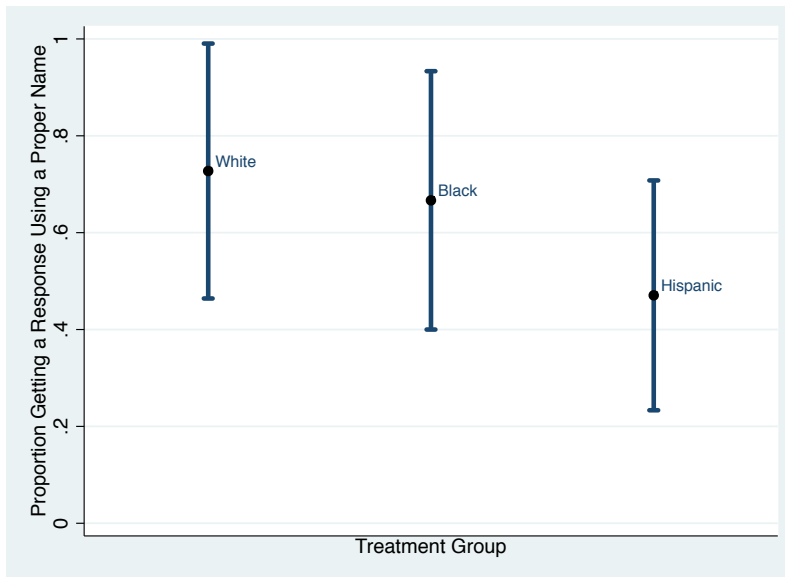
rather than ones about the marginal effect of a one unit increase in the population of a minority group.

We analyze the effects of these "1/3" variables by splitting our sample into the three racial treatment groups and estimating separate models. We report the results of these logit models for the responsiveness and friendliness dependent variables in the Supporting Information (Tables SI5 and SI6). These models include controls for city population, the poverty rate, and our "hard email" indicator. The main effects of interest are the "1/3" variables. To focus on substantive effects, and for ease of interpretation, we plotted the predicted change in the probability of getting 1) a response, and 2) a named greeting, in Figure 4. Here, the point estimates with confidence intervals capture the effects of moving from a lowest-third (black/Hispanic) community to a top-third community with all other variables held at their means. For example, the very first point depicts the extent to which emailing a housing authority in a high-black population community changes the probability of a white emailer obtaining a response relative to one who sent the same email to a housing authority in a low-black community.

The left panel in Figure 4 — the outputs of interest for the responsiveness variable —

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shows that the overall non-bias findings we reported earlier do *not* vary in important ways with community demographics. Whites', blacks', and Hispanics' likelihoods of receiving responses are always similar irrespective of whether they are emailing in a community in which they are a relatively large or small fraction of the population. This means that the aggregate results are not masking extremely high responsiveness in black communities and discrimination in others for example. These null results are robust to using other population cut-points (top vs. bottom 1/4s and 1/5s instead of 1/3s).

The named salutation models (right panel) do offer some suggestive evidence that a community's population affects the likelihood that blacks and Hispanics receive friendlier responses. Black names may be less likely (just outside the $p = .1$ level) to receive a named greeting in a high-Hispanic area. Hispanic names on the other hand, may be more likely ($p = .08$) to receive friendly responses in areas in the top third of the Hispanic population distribution compared to those in the lowest third. While we report the more conservative (and insignificant) results in which we split community racial demographics into thirds, the Hispanic results increase in magnitude and significance when comparing the top 1/4 to the bottom 1/4 ($p = .06$) and the top 1/5 to the bottom 1/5th ($p = .01$) of the percent Hispanic distributions.

To conclude our analysis, we zero in on substantively and theoretically interesting permutations of racial demographics. The previous analysis estimated the effects of one type of racial demographics conditional on others. Now, we create variables to distinguish four special types of communities: "High White" (top 1/3 white, bottom 1/3 black, bottom 1/3 Hispanic), "High Black" (top 1/3 black, bottom 1/3 white, bottom 1/3 Hispanic), "High Hispanic" (top 1/3 Hispanic, bottom 1/3 white, bottom 1/3 black), "High Black and Hispanic" (top 1/3 black, top 1/3 Hispanic, bottom 1/3 white). Focusing on these permutations directly speaks to questions of how responsiveness varies in communities that are dominated by one group, and whether racial minorities do better or worse depending on whether they are concentrated (alongside other non-whites) in a community, or whether they are the pri-

Figure 4: Change in predicted probability of getting a response and getting a named greeting as a function of moving from a community in the lowest third of percent Black/Hispanic to moving to one in the highest third.

Response Dependent Variable   **Name Greeting Dependent Variable**
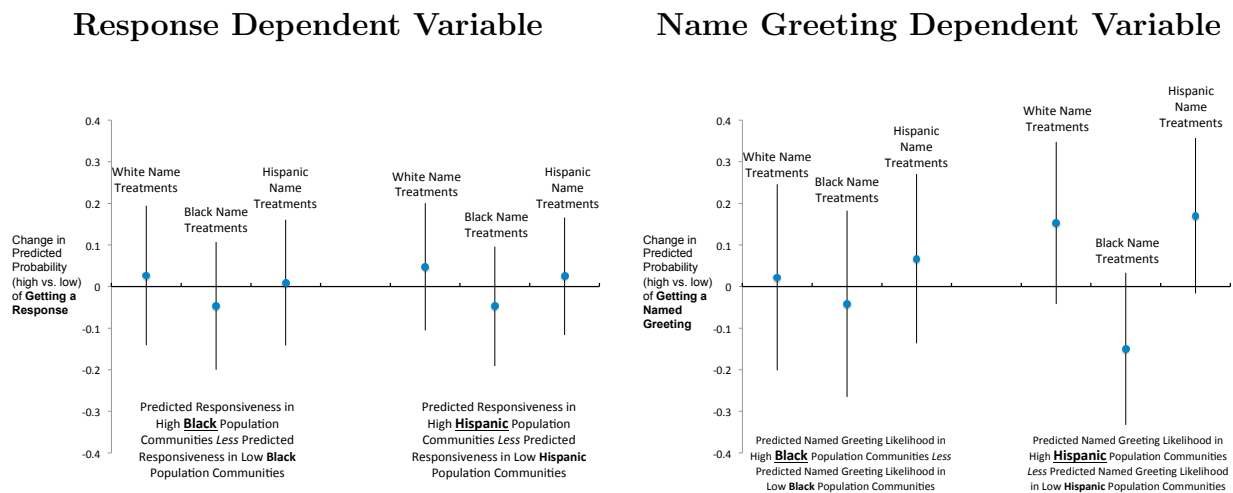
Estimates based on models described in the text and reported in Tables SI5 and SI6

mary minority group. All communities in the data that do not fit into one of these four categories are lumped together in the baseline. As before, we report the full model results (again splitting the sample by emailer race) in the Supporting Information (Tables SI7 and SI8). We plot substantive effects of interest in Figure 5. Here, the point estimates capture the differences in the predicted probability of getting a response (or named greeting) as a consequence of moving from one community type to another. For white names, the main question of interest—as articulated in H3—is responsiveness in very white areas compared to highly diverse ones. For blacks (and Hispanics), three comparisons are theoretically important: 1) The difference between a very white community and a very black (or Hispanic) one (one's own group is disproportionately represented) 2) the difference between a very white area and a very black *and* Hispanic one (minorities, including but not exclusively, one's own group, are disproportionately represented), and 3) the difference between a very Hispanic and a very black area (one's own group versus a different minority group).

This analysis again shows little variation in basic response rates. Consistent with H3, it provides some suggestive evidence, as above, that Hispanics obtain fewer unfriendly/formal responses in higher minority areas than they do elsewhere. Notably, the largest (and only

significant effect at the .05 level) is the difference between mainly white and high minority (Hispanic and Black) areas for named responses to the emails from Hispanics. This suggests that the underlying mechanism is more about day to day exposure to minorities in the community than to differential treatment by group. Hispanics do not do appreciably better in high Hispanic areas than they do in high black areas. As before, the effects are similarly signed and more significant ($p < .05$) when substituting a 1/4 cut point that compares more extreme places to each other.

Figure 5: Change in predicted probability of moving from a town of type X to a town of type Y (see horizontal axis labels).
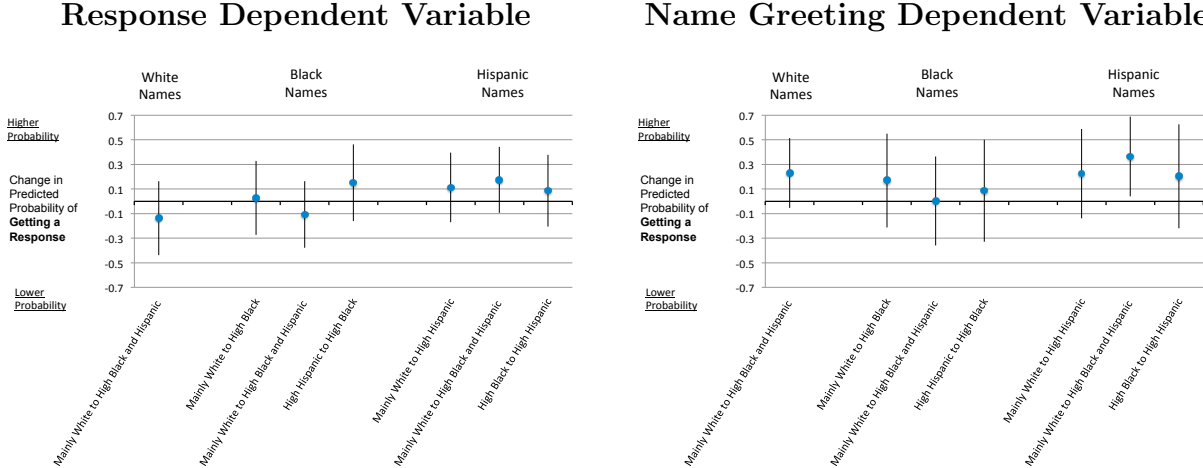
Demographic variables from 2012 American Community Survey. Mainly White = Top 1/3 in white population, bottom 1/3 in Black and Hispanic. High Black (Hispanic) = top 1/3 Black (Hispanic) Population, bottom 1/3 white and Hispanic (Black). High Black and Hispanic = Top 1/3 Black and Top 1/3 Hispanic Population. Probabilities are outputs from the models in Tables SI7 and SI8

5 Discussion

Our findings offer a mixed and nuanced portrait of discrimination, *and its absence*, in bureaucratic responsiveness. We find some support for the bias against minorities hypothesis (H1) in the context of email tone. Our further exploration of H2 and H3, however, suggests little support for H2. Hispanic housing officials did not provide more friendly responses to Hispanics' constituent service requests than they did to others'. We are cautious in extrapolating too much from these results, however, given our inability to test H2 for white and

black bureaucrats. Finally, we do find modest and suggestive support for H3 in the context of Hispanic e-mail tone.

Perhaps the most striking feature of our analysis—in contrast with a wealth of audit studies—is the absence of anti-black discrimination. Below, we discuss several possible systematic explanations for this important main difference. Before delving into these more substantively interesting possibilities, we address whether the key results may actually be a consequence class signaling in our design. Perhaps the perfect (though informal) English in our emails suggested a high socioeconomic status applicant and muted potential discrimination. Bertrand and Mullanainathan's (2004) seminal experimental study provides helpful evidence to counter this concern. They find that higher social class does not mitigate anti-black labor discrimination. Similarly, using a telephone audit to study housing discrimination, Massey and Lundy (2001) find that racial discrimination persists regardless of class cues, though lower class status does exacerbate anti-black discrimination. On balance, prior scholarship suggests that sending a favorable class cue is unlikely to have induced a null black discrimination result.

5.1   Blacks, Familiarity Bias, and Representative Bureaucracy

Demographic data from the National Low Income Housing Coalition (National Low Income Housing Coalition, 2012) and the American Community Survey (United States Census Bureau, 2013) reveal that blacks are significantly over-represented in America's public housing. While blacks compose just over 10 percent of the total population, and under 20 percent of total renters, they represent over 40 percent of public housing residents and voucher recipients. Whites, conversely, are significantly underrepresented, and Hispanics are proportionately represented. It could be, then, that the absence of discrimination against blacks is a consequence of housing authority officials' disproportionate familiarity with black constituents in the public housing context.

Because we are sampling at the *housing authority level*, however, we suspect that this

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mechanism may contribute to, but not completely explain, our results. America's racial geography suggests that the overrepresentation of blacks in public housing is likely most stark in large cities. But, each large city only comprises one observation in our study. Consequently, the bottom third of our distribution of housing authorities come from communities with essentially zero black residents. Thus, it is unlikely that the bulk of our housing authorities are disproportionately accustomed to black clients. Nevertheless, it is possible that these mechanisms affect bigger cities, and help explain why the population variable often had a positive effect on responsiveness to blacks, even when controlling for overall black population rates (e.g. Figure SI5).

5.2   Racial Coding of Poverty

A second, and related, potential explanation stems from research by Gilens (1999). This line of scholarship contends that, courtesy of the disproportionate use of images of blacks in negative stories about poverty, Americans largely oppose redistributive welfare initiatives because they associate blacks with the undeserving poor. It could be that, as a consequence of their jobs, housing authority employees are more likely to have had personal encounters with poor blacks and whites alike. Therefore, they are not receiving biased information about the racial composition of the poor from the media. Instead, their views of race and the deserving or underserving poor may be based on their direct experience. Applying Gilens' theory of mass attitudes about welfare to public housing officials offers a potential explanation for our findings. Experience working directly with the poor may diminish the racial coding of poverty, or a lead to different one, which could in turn the curb discriminatory impulses that manifest in other populations with different perceptions of the connections between race and poverty.

5.3 Fair Housing Legislation

In their research on voting officials, White, Nathan and Faller (2014) find lower levels of discrimination in locales that were covered by the Voting Rights Act. They cite research from Pager and Shepherd (2008) suggesting that organizational awareness, monitoring, and procedures can make potential discriminators cognizant of and reduce the risk of bias. Much of what public housing administrators do is governed extensively by the Fair Housing Act. Moreover, because of the Fair Housing Act, the Department of Housing and Urban Development makes an effort to regularly measure private market housing discrimination with frequent audit studies centered on residential steering and other forms of discriminatory behavior (Turner et al., 2002, 2013). Housing bureaucrats may therefore be highly knowledgeable about the potential for discrimination and about the procedures the federal government employs to mitigate it. This could make housing officials—like voting officials in VRA-regulated locales—less apt to discriminate. Furthermore, this effect could be particularly potent in mitigating anti-black discrimination. The Fair Housing Act emerged in 1968 in the context of national concern about black poverty and residential segregation. It may thus raise awareness about anti-black, but not anti-Hispanic, discrimination. As with the Voting Rights Act, the Fair Housing Act is not randomly assigned to particular bureaucracies or locations so we cannot assess its causal impact. Nonetheless, the absence of discrimination against blacks in particular suggests at least some efficacy in addressing housing discrimination. It may even point, especially in conjunction with the Voting Rights Act findings, to more broadly applicable interventions for reducing discrimination in other areas.

It is also plausible that the prominence of the Fair Housing Act made respondents suspicious that they were being studied by academics or the government. While we cannot definitively disprove this possibility, we believe that several pieces of evidence suggest that it is unlikely to be the case. First, while discrimination in the private housing market has been extensively studied (and audited), public housing authorities themselves have, to our knowledge, never been audited. Second, many of the responses we received seemed genuine and

informal in nature—not the sorts of replies you would anticipate from a bureaucrat aware she was being audited. Here is a sampling of some of these replies: "How old are you?;" "If you would like to contact my office, I would explain it to you better. My office number is [office phone number];" "[Housing Authority Website] has all the info u need." Third, the presence of an anti-Hispanic bias in friendliness further indicates that our experiment participants were unaware of our study; we should expect no bias to manifest if respondents were aware of the audit.

5.4 Bureaucratic Professionalism

A final possibility is that variations in professionalism and bureaucratic capacity affect responsiveness. Highly professional bureaucracies may be better at ensuring that they reply to outreach. They may also be more sensitive to issues of discrimination in housing in general and may be more likely to prevent differential treatment. To assess this possibility, we use the Public Housing Assessment Scores (PHAS) that the Department of Housing and Urban Development assigns to each housing authority. HUD calculates these scores based on four components: (1) physical inspection; (2) financial assessment; (3) management operations; and (4) use of the Capital Fund (a source of housing authority funding that can be used for a variety of operations). HUD collects the data that comprise these ratings through self-reports and audits (Department of Housing and Urban Development, 2015b).

To assess the potential links between higher professionalism and reduced discrimination, we split the sample by HUD Assessment Scores.[15] The median assessment score in our sample was 89 out of 100. This actually corresponded to the cut point between "high performers" and others in the HUD designations that accompany the numerical scores. The data suggest that professionalism increases responsiveness to both whites (19 point difference between high performers and others $p = .01$) and blacks (16 percentage point difference, $p = .02$) but not Hispanics (difference of less than 1 percentage point). In these housing authorities,

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[15]Not all housing authorities had assessment scores available ($n = 671$ for all analyses).

the black response rates exceed those of Hispanics by a whopping 15 percentage points ($p = .024$). Conversely, whites, blacks and Hispanics all obtain about the same response rates from the lower performing housing authorities.

While these general trends hold when we use different cut points, the stark black and Hispanic patterns soften. Thus, we cannot draw any strong conclusions. Moreover, professionalism does not directly explain the absence of anti-black discrimination. Indeed, in both high- and low-professionalism housing authorities, blacks experience no racial discrimination in responsiveness. One possibility is that most housing authorities are relatively professional (the vast majority score at least 80 out of 100 on the HUD scale), and that the main effects of professionalism are sufficient to mute discrimination. Moreover, professionalism in conjunction with the Fair Housing Act could make officials acutely vigilant about preventing discrimination against blacks in particular.

6 Conclusion

By comparing bias towards blacks and Hispanics—a juxtaposition most studies eschew to preserve power (though see Schram et al. (2009))—we are able to uncover a previously unspecified type of bureaucratic bias that impacts one group—Hispanics—but not the other. Indeed, our findings suggest that Hispanics are marginally less likely to receive responses from housing bureaucrats, and, when they do receive responses, they are far less likely to be friendly ones. What's more, our results likely represent a lower bound on discrimination against Hispanic constituents. In our study, putative Hispanic constituents are sending emails with perfect grammar which may provide counter-stereotypical cues to caseworkers. This anti-Hispanic bias has bigger policy implications. In her in-depth exploration of local bureaucracies, Marrow (2011) found that these organizations—including schools and social service organizations—play a critical role in incorporating (or failing to incorporate) new Hispanic immigrants. Unfriendliness toward Hispanics seeking public housing, a low-income

population that likely already feels stigmatized, has the potential to be quite alienating. These types of interactions with government agencies could harm prospects for broader political and social incorporation.

Moreover, our findings reveal that we may observe different discriminatory biases depending upon the political and economic arena. This does not necessarily mean that researchers and policymakers should take our paper as evidence that discrimination is more limited than previously feared, but it should at least serve as a check against over-generalizing from the excellent existing work that does find discrimination. At a minimum, our findings suggest that bureaucratic discrimination may be contingent on the demographics of the place in which a bureaucracy is situated. More generally, we suspect that the level of bias depends on the structure of the bureaucracy. A future research agenda that compares different bureaucracies, and bureaucratic oversight, might help scholars and policymakers identify policy solutions to the long-thorny problem of racial discrimination in the public and private sectors.

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Supporting Information

Table SI1 compares the housing authorities randomly assigned to each of our six conditions on pertinent attributes related to race, income, and housing.

Table SI1: Average community demographics by treatment

Condition	% White	% Black	% Hispanic	Med HH Inc ($)	Pov Rate	% Owner Occ
Hispanic Female	64.3 %	14.0 %	15.8 %	40467	15.4 %	56.7 %
Hispanic Male	67.2 %	14.8 %	12.1 %	41187	14.3 %	57.3 %
Black Female	66.3 %	12.9 %	15.2 %	39837	15.1 %	58.9 %
Black Make	67.8 %	11.9 %	13.9 %	41970	14.0 %	56.9 %
White Female	65.4 %	14.1 %	14.3 %	42121	14.3 %	56.7 %
White Male	67.4 %	13.2 %	13.6 %	42592	14.4 %	58.1 %

Data from 2012 American Community Survey

Additional Results

Tables SI2 SI3 and SI4 include the results of models for all three dependent variables in which we do not consolidate treatments by race. In all three, the base categories are female and white. Thus, the "male" effect is the white-male condition, the "black" effect is the black female condition and the "Hispanic" effect is the Hispanic Female condition. Likelihood ratio tests comparing models with and without the treatments included (models 2 and 3 in each table) coincide with the results in the paper. The tests are insignificant for the response and 24 hour response variables and significant for the proper name one.

In addition, we include more comprehensive results using the 24 hour response variable than we reported in the body of the paper. There, we briefly noted that using this variable bolsters the responsiveness findings but with even less discrimination against Hispanics. We show the results in Figure SI1. About 80% of responses came within the first 24 hours for each of the six names. The differences were small and statistically insignificant (p=.87 χ^2 test). Brett, the white male, obtained the lowest 24 hour response percentage, and also had the highest median response time, but again, these differences are small. The

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difference between the fastest median response time (Shanice) and the slowest (Brett) was about 90 minutes. These null results are bolstered by the three models in Table SI3. Here, the likelihood ratio test once again provides evidence against discriminatory behavior ($\chi^2(5)$=2.26, p= .812). These results also hold when addressing the "truncation by death (non response)" problem. If we code all responses that did not arrive in 24 hours (including those that never arrived at all) as zeroes, we find that blacks still do the best, 48%, and whites and Hispanics see similar response rates (42% and 40%).

Figure SI1: Proportion of responses received in 24 hours (excluding non-responses)

By race interacted with gender

By race
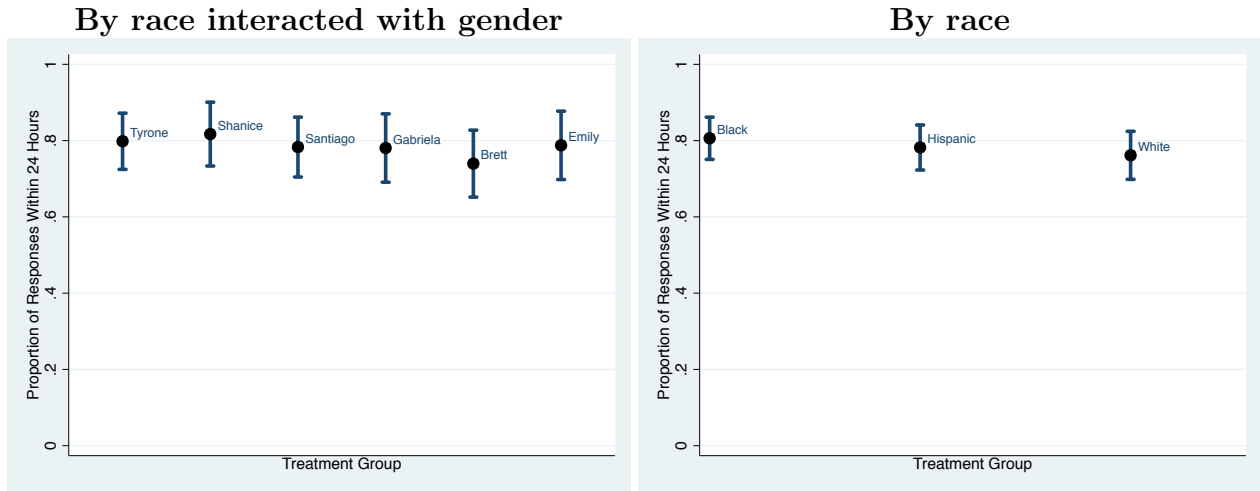
Table SI2: Logit models for the dependent variable capturing whether housing officials responded. All six treatments included separately

	(1) Responsiveness DV	(2) Responsiveness DV	(3) Responsiveness DV
Male	-0.15		-0.19
	(0.23)		(0.24)
Black	-0.07		-0.07
	(0.24)		(0.25)
Hispanic	-0.27		-0.28
	(0.24)		(0.24)
Black Male	0.38		0.35
	(0.33)		(0.33)
Hispanic Male	0.14		0.14
	(0.32)		(0.32)
Percent Black		-0.34	-0.31
		(0.52)	(0.52)
Percent Hispanic		-0.31	-0.32
		(0.43)	(0.43)
Poverty Rate		-1.65	-1.64
		(1.21)	(1.21)
Log Population		0.13	0.13
		(0.07)	(0.07)
Hard Email		-0.46**	-0.46**
		(0.14)	(0.14)
Constant	0.39*	-0.50	-0.39
	(0.17)	(0.74)	(0.76)
Observations	991	978	978
Log Likelihood	-674.7	-652.9	-650.1
χ^2	5.992	32.59	38.21
DF	5	5	10

Standard errors in parentheses

** $p < 0.01$, * $p < 0.05$

Base categories are female and white. Thus, the "male" effect is the white-male condition, the "black" effect is the black female condition and the "Hispanic" effect is the Hispanic Female condition." Coefficients in columns 2 and 3 are different even when they appear identical when rounded to two decimal places. Male, Black, Hispanic, Black Male, Hispanic male are traits of the emails we sent (the treatments). The other variables are traits of the communities / housing authorities.

Table SI3: Logit models for the dependent variable capturing whether housing officials responded in 24 hours if they responded.

	(1) 24 Hour DV	(2) 24 Hour DV	(3) 24 Hour DV
Male	-0.27		-0.30
	(0.36)		(0.36)
Black	0.19		0.23
	(0.40)		(0.40)
Hispanic	-0.04		-0.06
	(0.38)		(0.38)
Black Male	0.14		0.13
	(0.51)		(0.52)
Hispanic Male	0.28		0.30
	(0.51)		(0.51)
Percent Black		-0.18	-0.15
		(0.87)	(0.87)
Percent Hispanic		-0.91	-0.94
		(0.69)	(0.69)
Poverty Rate		1.30	1.25
		(2.00)	(2.00)
Log Population		-0.01	-0.01
		(0.10)	(0.10)
Hard Email		-0.13	-0.14
		(0.22)	(0.22)
Constant	1.31**	1.40	1.48
	(0.27)	(1.15)	(1.18)
Observations	560	551	551
Log Likelihood	-291.4	-287.5	-286.3
χ^2	1.771	2.625	4.882
DF	5	5	10

Standard errors in parentheses

** $p < 0.01$, * $p < 0.05$

Base categories are female and white. Thus, the "male" effect is the white-male condition, the "black" effect is the black female condition and the "Hispanic" effect is the Hispanic Female condition." Coefficients in columns 2 and 3 are different even when they appear identical when rounded to two decimal places. Male, Black, Hispanic, Black Male, Hispanic male are traits of the emails we sent (the treatments). The other variables are traits of the communities / housing authorities.

Table SI4: Logit models for the dependent variable capturing whether housing officials began responses with a named greeting if they responded.

	(1) Named Greeting DV	(2) Named Greeting DV	(3) Named Greeting DV
Male	-0.07		-0.10
	(0.31)		(0.32)
Black	-0.42		-0.39
	(0.32)		(0.33)
Hispanic	-0.64*		-0.70*
	(0.32)		(0.33)
Black Male	0.36		0.32
	(0.43)		(0.44)
Hispanic Male	-0.31		-0.22
	(0.43)		(0.44)
Percent Black		0.65	0.75
		(0.73)	(0.74)
Percent Hispanic		1.22*	1.30*
		(0.62)	(0.63)
Poverty Rate		-1.14	-0.98
		(1.68)	(1.71)
Log Population		-0.03	-0.03
		(0.09)	(0.09)
Hard Email		-0.40*	-0.41*
		(0.19)	(0.19)
Constant	0.49*	0.48	0.91
	(0.23)	(0.97)	(1.01)
Observations	558	549	549
Log Likelihood	-376.7	-375.3	-366.6
χ^2	18.63	8.659	26.10
DF	5	5	10

Standard errors in parentheses

** $p < 0.01$, * $p < 0.05$

Base categories are female and white. Thus, the "male" effect is the white-male condition, the "black" effect is the black female condition and the "Hispanic" effect is the Hispanic Female condition." Coefficients in columns 2 and 3 are different even when they appear identical when rounded to two decimal places. Male, Black, Hispanic, Black Male, Hispanic male are traits of the emails we sent (the treatments). The other variables are traits of the communities / housing authorities.

Table SI5: Split sample (by race of emailer) logit models for the **email response** dependent variable with cities broken into thirds based on the percent of the population that is black and the percent Hispanic

	(1) White Names	(2) Black Names	(3) Hispanic Names
Mid 1/3 Black Pop	0.23	0.02	0.03
	(0.30)	(0.29)	(0.27)
Top 1/3 Black Pop	0.11	-0.19	0.04
	(0.35)	(0.33)	(0.31)
Mid 1/3 Hispanic Pop	0.10	0.32	0.01
	(0.30)	(0.30)	(0.27)
Top 1/3 Hispanic Pop	0.20	-0.20	0.10
	(0.32)	(0.30)	(0.29)
Poverty Rate	-4.67*	-1.26	-0.75
	(1.99)	(1.70)	(1.60)
Log Population	-0.12	0.41**	0.03
	(0.12)	(0.13)	(0.11)
Hard Email	-0.58*	-0.23	-0.55*
	(0.25)	(0.25)	(0.22)
Constant	2.34	-3.57**	0.12
	(1.34)	(1.36)	(1.15)
Observations	305	321	352
Log Likelihood	-199.7	-203.6	-239.7
χ^2	16.23	23.63	7.945
DF	7	7	7

Standard errors in parentheses

** $p < 0.01$, * $p < 0.05$

Demographic variables from 2012 American Community Survey. Base categories are bottom 1/3 of Black (Hispanic) population.

The remaining tables are part of the analysis of H3 in the text. The predicted probabilities in Figures 4 and 5 come from these models. As we noted in the text. The results are robust to using 1/4s or 1/5s instead of 1/3s. The null results do not change. The suggestive Hispanic results get stronger.

Table SI6: Split sample (by race of emailer) logit models for the **named greeting** dependent variable with cities broken into thirds based on the percent of the population that is black and the percent Hispanic

	(1) White Names	(2) Black Names	(3) Hispanic Names
Mid 1/3 Black Pop	-0.23	0.02	0.47
	(0.40)	(0.38)	(0.39)
Top 1/3 Black Pop	0.10	-0.17	0.28
	(0.50)	(0.46)	(0.44)
Mid 1/3 Hispanic Pop	-0.07	-0.65	0.26
	(0.40)	(0.38)	(0.39)
Top 1/3 Hispanic Pop	0.67	-0.62	0.71
	(0.44)	(0.40)	(0.40)
Poverty Rate	-1.22	5.24	-3.03
	(3.15)	(2.90)	(2.51)
Log Population	-0.03	0.13	-0.11
	(0.17)	(0.14)	(0.16)
Hard Email	-0.47	-0.50	-0.20
	(0.34)	(0.33)	(0.33)
Constant	0.97	-1.17	0.72
	(1.88)	(1.61)	(1.66)
Observations	174	192	183
Log Likelihood	-112.7	-126.4	-121.0
χ^2	7.479	10.31	6.418
DF	7	7	7

Standard errors in parentheses
** $p < 0.01$, * $p < 0.05$

Demographic variables from 2012 American Community Survey. Base categories are bottom 1/3 of Black (Hispanic) population.

Table SI7: Split sample (by race of emailer) logit models for getting a response with indicator variables for special types of towns (e.g. mainly white or high Hispanic).

	(1) White Names	(2) Black Names	(3) Hispanic Names
Mainly White	-0.19	-0.33	-0.27
	(0.42)	(0.39)	(0.37)
High Black	-0.44	-0.21	-0.16
	(0.52)	(0.52)	(0.47)
High Hispanic	-0.34	-0.83	0.19
	(0.54)	(0.49)	(0.47)
High Black and Hispanic	-0.74	-0.76	0.44
	(0.47)	(0.42)	(0.44)
Poverty Rate	-3.44	-1.38	-1.04
	(1.95)	(1.77)	(1.63)
Log Population	-0.03	0.40**	-0.01
	(0.12)	(0.12)	(0.10)
Hard Email	-0.63*	-0.19	-0.56*
	(0.26)	(0.25)	(0.22)
Constant	1.57	-3.30*	0.58
	(1.38)	(1.38)	(1.19)
Observations	305	321	352
Log Likelihood	-198.6	-202.3	-238.8
χ^2	18.33	26.32	9.711
DF	7	7	7

Standard errors in parentheses

** $p < 0.01$, * $p < 0.05$

Demographic variables from 2012 American Community Survey. Mainly White = Top 1/3 in white population, bottom 1/3 in Black and Hispanic. High Black (Hispanic) = top 1/3 Black (Hispanic) Population, bottom 1/3 white and Hispanic (Black). High Black and Hispanic = Top 1/3 Black and Top 1/3 Hispanic Population.

Table SI8: Split sample (by race of emailer) logit models for getting a named greeting with indicator variables for special types of towns (e.g. mainly white or high Hispanic).

	(1) White Names	(2) Black Names	(3) Hispanic Names
Mainly White	0.60	0.28	-0.85
	(0.58)	(0.55)	(0.58)
High Black	1.24	1.08	-0.73
	(0.87)	(0.84)	(0.84)
High Hispanic	1.48	0.64	0.17
	(1.11)	(0.75)	(0.64)
High Black And Hispanic	2.24*	0.29	0.73
	(1.10)	(0.57)	(0.55)
Poverty Rate	-3.02	4.50	-3.00
	(2.88)	(2.59)	(2.39)
Log Population	-0.01	0.04	-0.09
	(0.16)	(0.13)	(0.15)
Hard Email	-0.43	-0.60	-0.20
	(0.35)	(0.34)	(0.33)
Constant	0.84	-0.68	1.18
	(1.86)	(1.56)	(1.67)
Observations	174	192	183
Log Likelihood	-109.6	-126.9	-120.7
χ^2	13.74	9.298	7.009
DF	7	7	7

Standard errors in parentheses

** $p < 0.01$, * $p < 0.05$

Demographic variables from 2012 American Community Survey. Mainly White = Top 1/3 in white population, bottom 1/3 in Black and Hispanic. High Black (Hispanic) = top 1/3 Black (Hispanic) Population, bottom 1/3 white and Hispanic (Black). High Black and Hispanic = Top 1/3 Black and Top 1/3 Hispanic Population.